

What is claimed is:

1. A method for tracking eye movement comprising the steps of:
removably affixing a ring member to an eye in surrounding relation to a
cornea of the eye;

5 transmitting a plurality of incident light spots onto the ring member;
detecting reflections from the ring member of the incident light spots;
determining eye movement from an analysis of the reflections.

10 2. The method recited in Claim 1, wherein the affixing step comprises applying
a vacuum to at least a portion of the ring member along an interface between the ring
member and the eye.

15 3. The method recited in Claim 1, wherein the transmitting step comprises
transmitting four light spots spaced substantially evenly about the ring member.

4. The method recited in Claim 1, wherein the ring member comprises a color
contrastive with an area of the eye adjacent a ring member placement location.

20 5. The method recited in Claim 4, wherein the color comprises a light color on
an inner ring and a dark color on an outer ring, the inner and the outer rings concentric.

6. The method recited in Claim 5, wherein the inner ring is white and the outer

ring is black.

7. The method recited in Claim 1, wherein a center of the ring member is substantially coincident with a center of the cornea.

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8. The method recited in Claim 1, wherein the ring member comprises:

a substantially toroidal ring having a toroidal tunnel and a hole from an outside to the tunnel;

10 a plurality of apertures extending between the tunnel and an inner face of the ring;

a base affixed to the ring, the base having a channel therethrough extending from a hose aperture at an outside of the base to the hole; and

15 wherein the affixing step comprises placing the ring inner face around the cornea, connecting a hose to the hose aperture, the hose in fluid communication with a vacuum source, and activating the vacuum source.

9. The method recited in Claim 1, wherein the ring member comprises:

a substantially toroidal ring having a substantially toroidal groove in an inner face thereof, the groove substantially concentric with the ring, and a hole from an outside 20 to the groove;

a base affixed to the ring, the base having a channel therethrough extending from a hose aperture at an outside of the base to the hole; and

wherein the affixing step comprises placing the ring inner face around the cornea, connecting a hose to the hose aperture, the hose in fluid communication with a vacuum source, and activating the vacuum source.

- 5 **10.** A system for tracking eye movement comprising:
- a ring member;
- means for removably affixing the ring member to an eye in surrounding relation to a cornea of the eye;
- means for transmitting a plurality of incident light spots onto the ring member;
- 10 means for detecting reflections from the ring member of the incident light spots;
- means for determining eye movement from an analysis of the reflections.
- 15 **11.** The system recited in Claim 10, wherein the affixing means comprises a vacuum source in fluid communication with at least a portion of the ring member along an interface area for interfacing with the eye.
- 20 **12.** The system recited in Claim 11, wherein the vacuum source comprises a hose having a first end in fluid communication with a depression in an inner face of the ring member.
- 13.** The system recited in Claim 12, wherein the depression comprises a

substantially toroidal groove concentric with the ring member.

14. The system recited in Claim 10, wherein the transmitting means comprises means for transmitting four light spots spaced substantially evenly about the ring member.

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15. The system recited in Claim 10, wherein the ring member comprises a color contrastive with an area of the eye adjacent a ring member placement location.

16. The system recited in Claim 15, wherein the color comprises a light color on an inner ring and a dark color on an outer ring, the inner and the outer rings concentric.

17. The system recited in Claim 16, wherein the inner ring is white and the outer ring is black.

15 18. The system recited in Claim 10, wherein a center of the ring member is affixable to be substantially coincident with a center of the cornea.

19. The system recited in Claim 10, wherein the ring member comprises:
a substantially toroidal ring having a toroidal tunnel and a hole from an
20 outside to the tunnel;
a plurality of apertures extending between the tunnel and an inner face of the
ring;

a base affixed to the ring, the base having a channel therethrough extending from a hose aperture at an outside of the base to the hole; and

wherein the affixing means comprises a hose connected to the hose aperture, the hose in fluid communication with a vacuum source, the ring inner face
5 affixable around the cornea and retainable in place by means of a vacuum applied to the ring apertures in contact with the eye.

20. The system recited in Claim 1, wherein the ring member comprises:

a substantially toroidal ring having a substantially toroidal groove in an inner
10 face thereof, the groove substantially concentric with the ring, and a hole from an outside to the groove;

a base affixed to the ring, the base having a channel therethrough extending from a hose aperture at an outside of the base to the hole; and

wherein the affixing means comprises a hose connected to the hose
15 aperture, the hose in fluid communication with a vacuum source, the ring inner face affixable around the cornea and retainable in place by means of a vacuum applied to the ring apertures in contact with the eye.